Roof Ventilators and Auxiliary Equipment

Architects Manual JV

W. F. Hirschman Co. Inc.
BUFFALO
N.Y.

HIGH GRADE ROOF VENTILATORS

and Auxiliary Equipment

ELECTRIC VENTILATORS

Effico Wind-Electric
"F" Electric
Isolated Electrics
LeRoy Electric
Hercules Power
Lornate Electric
Modified Hercules
Silent Church

ROTARY VENTILATORS

Effico Rotary Ball-bearing
Effico Skylight base ventilator

LOUVER UNIT VENTILATORS

Effico Louver Unit Rotary
L. U. (Louver Unit) Stationary
LeRoy Louver Units Stationary

STATIONARY VENTILATOR COWLS

Firma
Super Firma
Lornate
S. E. (syphon exhaust)

STANDARDIZED ROOF BASES FOR VENTILATORS

HIRSCHMAN STEEL VENTILATOR CURBS

Style A Double shell
Mineral wool packed
Style B Single shell
Satisfactory for Industrial use and warm climates where condensation is not a problem

AUXILIARY EQUIPMENT

Self closing dampers
Circular Louver dampers
Intake and re-circulating dampers
Self locking dampers
Skylights
Fans

ELECTRIC DAMPER AND MOTOR CONTROL

Over Twelve Types of Controls for the remote control by Thermostat, hydrostat, or by manual switch.

A HIGH STANDARD

The W. F. Hirschman Co., Inc., has an established niche in the ventilator field for unusual high quality. Years of consistent study of the ventilating problems, together with the extensive continuous research enables this company to offer a full line of Roof Ventilators each carefully designed to give satisfactory service. Our auxiliary equipment also shows advanced design.

Each type of Hirschman Ventilator has many merits. Hirschman Co. equipment is developed with the firm conviction that ungainly, clumsy appearing ventilators are not necessary to obtain high exhaust capacity, weather proofness, etc. Thus we offer apparatus of symmetrical lines that radiate high class workmanship.

We are originators of High-Grade "Thru the Roof" ventilating equipment. We do not Imitate!

Design

Our equipment is extensively used for ventilating public and semi-public buildings because appearance is given first consideration in all our designs, thus making our ventilators desirable for buildings of architectural beauty. Our requisites besides high efficiency are: very low height, symmetrical contour, careful layout to permit nice finish, good workmanship, etc.

Access doors of ample size are built in all ventilators containing louver dampers, air or electric motors, fans, etc.

Controls (Our Own Manufacture)

Electric damper and Motor Control—We built and installed the first electric damper control ever put in a ventilator, likewise the first combined damper and fan motor control. Our line of controls are unequalled.

Materials

Only the highest grade materials are used. Iron sheets, both black and galvanized and reinforcing members are made of specially selected alloy for our requirements, for rust resisting and for forming. All rivets have burrs under the burred end of the rivets. This applies to iron, copper or other metal. Iron members are rust proofed by sand blasting and specially prepared rust proofing finish.

Exhaust Capacity

We give careful consideration in design to obtain high exhaust capacity at very low wind and moderate increase during very high winds, a requisite very valuable for cold climates as a fuel saver.

Wind Direction

There is no front or back to any Hirschman ventilator, the wind always helping, never interfering.

W. F. HIRSCHMAN CO., INC.
BUFFALO . . . NEW YORK
Works—LE ROY . . . NEW YORK

BRANCH OFFICES
New York City, 202 East 44th Street Boston, Mass., 143 Federal Street

Rotary Ball-Bearing—Fully Automatic

Exhausts, Wind or No Wind

When the wind is blowing sufficiently to drive the wind turbine, and remove the desired amount of air from the building being ventilated, the electric motor in ventilator is still. Instantly, when the wind turbine moves below previously determined revolutions, the electric fan carries the load, starting automatically and runs until the wind again drives the wind turbine.

The *electric motor is cut off and on automatically.*

Static Pressure—Motor and fan can be supplied to pull against 1/8-in. static resistance by the employment of motor only, or motor and wind turbine. This will have no deteriorating effect on using apparatus for regular ventilating purposes.

Many Valuable Features

This ventilator has every feature possessed by the Effico Wind-Driven Head, and the Effico Internal Louver Unit Ventilator, *also* possessing the added wonderful requisite of exhausting a given volume of air continuously. (*Wind or no wind.*)

Master Ventilator (Hirschman Method)

An installation need only comprise one Automatic Ventilator. The other ventilators may all be controlled by this Master Ventilator. Fresh air, and recirculating dampers, supply fans, etc., can be controlled automatically by this Master Ventilator, and is adjustable to other capacities after installation.

Self-contained Unit Construction

The Effico Wind-Electric Ventilator comprises the wind turbine, electric motor, fan, and roof base forming a complete exhaust unit.

Selecting A Ventilator

When in need of a ventilating apparatus it is best to choose one that does not depend upon mechanical exhausting only, for a good roof ventilator is acknowledged to be superior to an arrangement that closes entirely unless the motor is running.

Dampers

Effico Wind-Electric Ventilators are supplied with tight fitting, carefully balanced dampers. The larger sizes are furnished with Effico Multiple Circular Louver Dampers. *See page* 4.

All dampers are operated by chain, electrically, by Hirschman electric damper control or by air diaphragm motor in connection with thermostatic controlled heating and ventilating systems.

Hirschman electric damper control may be installed in the ventilator, coordinating damper and fan motor, if desired, *see page* 10.

Specifications *See page* 11 *for specifications of Wind-Electric and Wind Electric Master Control.*

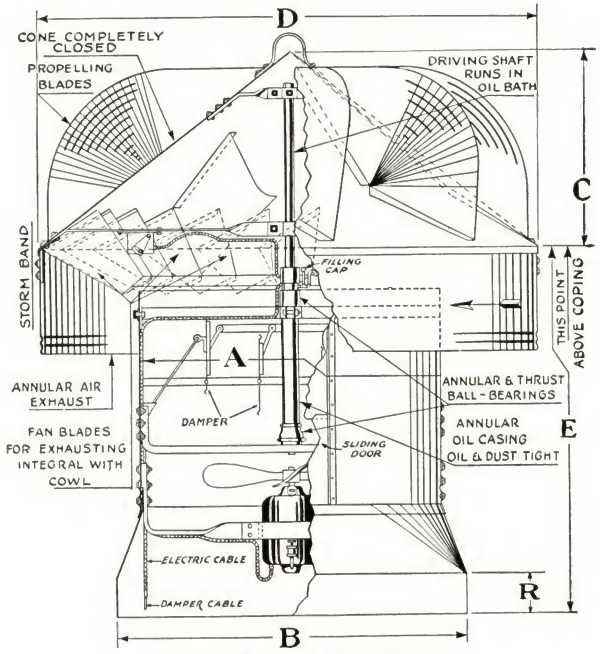
Painting All Galvanized Effico Wind-Electric Ventilators are finished in Gray Enamel or other color if desired.

Isolated Ventilator The motor in this ventilator may be had in the isolated motor drum section as shown on page 7.

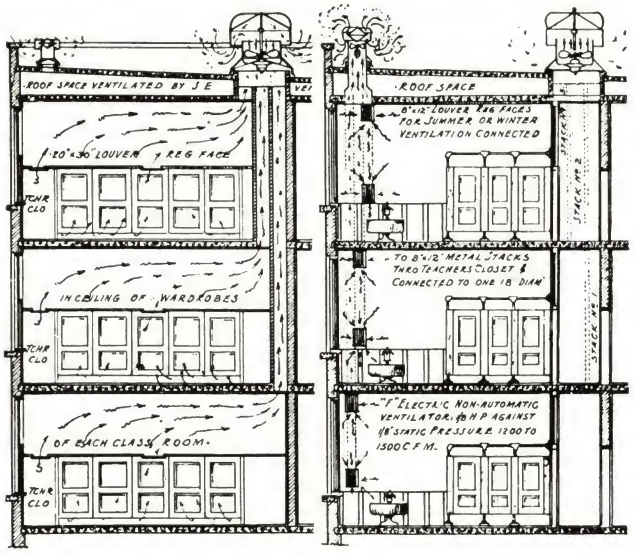
DIMENSIONS AND CAPACITIES OF EFFICO WIND-ELECTRIC VENTILATORS

Nominal ventilator size in inches	Dimensions in inches (see diagram) A—Actual size of ventilator	B—Base	C—Height of blades	D—Dia. of storm band	E—Height to blades	Thickness of metal: Gage G. I. Cowl	Gage G. I. Base	Oz. copper Cowl	Oz. copper Base	Motor H.P.	Cubic feet of air exhausted per minute at 0-5 miles per hour wind velocity: Temperature difference in degree. Fahr. between air in building and outside air 0°-10°	10°-20°	20°-30°
12	14	20	8	21 3/4	32	24	22	14	16	1/30	440	515	560
18	19	26	10	28 1/2	32	24	22	16	18	1/30	850	950	1040
24	25	38	14	40	35	24	20	16	18	1/30	1600	1780	1900
30	31	40	14	50	37	24	20	18	20	1/30	2300	2690	2900
36	37	44	18	60	40	22	18	18	24	1/6	3400	3810	4100
42	43	50	22	68	46	22	18	20	24	1/6	4500	5010	5500
48	49	56	24	76	46	22	18	20	24	1/4	5900	6700	7400
54	55	62	24	86	46	22	18	24	24	1/4	7300	8450	9500
60	60	66	24	98	50	22	18	24	24	1/2	9300	10600	11900
72	72	80	30	114	50	20	16	24	24	1/2	13500	14600	16000
84	84	92	40	130	50	20	16	24	32	1	18000	21000	23000
96	96	116	45	153	50	20	16	24	32	1	22500	27000	29000

R dimension—5 in. on all sizes. C dimension should be above coping.
For Wind Driven Rotaries, see two pages following.

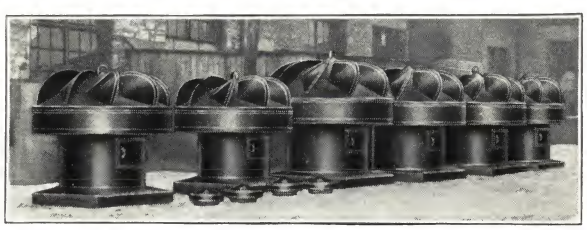


Details of Effiico Wind-Electric Rotary Ball-Bearing Ventilator, Patented



Sections Showing Typical Arrangement

Effico Wind-Electric Ventilators exhausting from classrooms, F electric ventilators exhausting from toilet rooms and S-E Ventilators exhausting from attic spaces.

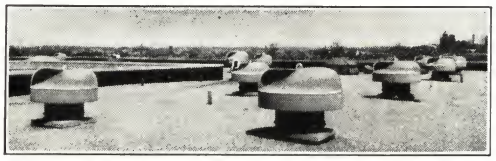


Battery of Effico Wind-Electric Full Automatic Ventilators

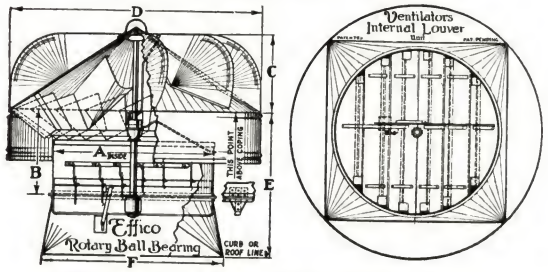
This battery of three 48-in., two 42-in., and one 36-in. Effico Wind-Electric Full Automatic Ventilators was photographed before installing. Note size by contrast with the background. They have a combined exhausting capacity of 31,500 c. f. m., regardless of wind velocity or temperature difference and can be adjusted to a 25% increase if necessary. Combined motors have only 2 hp. consumption. Now installed in a Massachusetts school.

EFFICO INTERNAL LOUVER UNIT VENTILATOR

Containing Circular Louver Damper, For Thermostatic Control



Typical Effico Louver Unit Installation



Effico Internal Louver Unit Ventilator Patented

Open Closed

Multiple Circular Louver Damper in Neck of Ventilator

EFFICO INTERNAL LOUVER UNIT VENTILATOR DIMENSIONS AND CAPACITIES

Guaranteed and Conservative

Dimensions in inches						Ga. Gal.		Net weight lb.	Oz. Cop. per		Cubic feet of air exhausted per minute 5 MPH. Wind velocity				
											Temperature difference in degrees Fahr. in building and outside				
A	B	C	D	E	F	Cowl	Neck & base		Cowl	Neck & base	0	10	20	30	Telegraph Code Gal. Toncan Vents
12	11	8	21½	23	. . .	24	24	. . . .	14	14	350	440	515	560	Veil
18	11½	10	28½	23	22	24	24	90	16	18	600	850	950	1040	Vale
24	16	14	40	26	30	24	22	140	18	20	1020	1600	1780	1900	Valet
30	22	14	50	28	36	24	20	190	20	20	1560	2300	2690	2900	Vive
36	24	18	60	30	42	22	18	225	24	24	2300	3400	3810	4100	Varve
42	33	22	68	38	48	22	18	350	24	24	3150	4500	5010	5500	Vetch
48	34	24	76	38	54	22	18	400	24	24	4000	5900	6700	7400	Vax
54	35	24	86	38	60	22	18	600	24	24	5100	7300	8450	9500	Vaid
60	37	24	98	38	66	20	18	710	24	24	6500	9300	10600	11900	Valor
66	43	30	103½	44	72	20	18	800	24	24	8100	11200	12250	13400	Vamp
72	50	30	114	48	80	20	18	880	24	32	9800	13500	14600	16000	Vane
84	54	40	130	48	92	18	16	1050	24	32	12500	18000	21000	23000	Vang

For round bases, "E" dimension remains the same. Dimensions "C" should be above coping.

The Effico Internal Louver Unit

This comprises the Effico Rotary Ball Bearing Ventilator head constructed with a special short base, and neck. In the base is built a circular multiple blade Louver damper. The damper is carefully balanced and heavily constructed of stretcher leveled sheets. The blades lap and are fitted in a circular frame. It is adaptable for manual control, but is intended for a thermostatic control-system. The roof base is very low and is a part of the Unit. It is supplied in either the square or round type.

Damper Control

Hirschman Electric Damper Control or air diaphragm motor can be installed by us before shipment.

Each ventilator neck has also a tight fitting door to give free access to the Louvers and to the operating motor. The object of the specially low base and the low roof base is to make the entire Unit as low on the roof as possible.

Low Height Construction

The Effico Rotary Ball Bearing Ventilator head is already lower in height by 50% than any other rotary type of ventilator. By using the construction as outlined above, the entire Unit is brought as low to the roof as is permissable to still allow the air free exhausting, and to maintain the outlets above the snowline. By adopting the circular multiple louvers, of which we are the inventors, we can standardize on sizes and build the round louver for considerably less than the square or rectangular styles.

By installing same in the neck of the ventilator at our shop, we not only give a perfect fit, but also eliminate all indefiniteness as to the correct location and size of the damper and cut the installing cost at least 80%. It is also easier to install the operating motor and makes it more accessible. The size of the damper is the full size of the stack, and yet it is about 40% smaller in area than those heretofore used in the square or rectangular damper, again reducing the cost considerably.

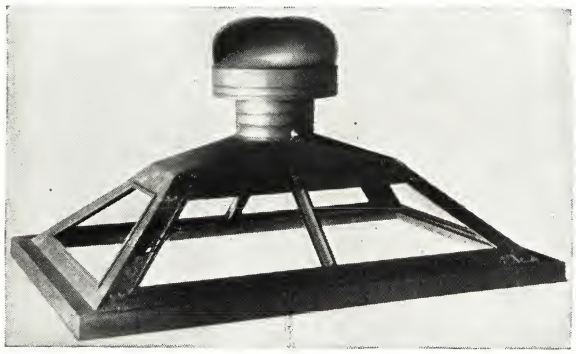
Advantage of a Complete Unit

By supplying the contractor with the complete EFFICO INTERNAL LOUVER UNIT VENTILATOR the builder is assured of a well designed, uniform and complete Unit.

Heretofore, the contractor purchased the ventilator from one manufacturer, probably built the roof base himself, and purchased the dampers elsewhere, or even the dampers were supplied and installed by another contractor. This added materially to the cost.

Specifications on page 11.

EFFICO SKYLIGHT VENTILATOR BASE



Puttyless Construction

The Effico Skylight Ventilator Bases have a glass area which is at least equivalent to their roof area. "Rain in" and "blow in" are entirely eliminated. There is no swinging sash to operate, and the ventilation is perfect, serving the dual purpose of giving real ventilation and allowing daylight into the building, one opening in the roof serving both purposes.

Standard Skylight Curb Dimensions—3x3 ft.; 3x4 ft.; 3x6 ft.; 4x4 ft.; 4x6 ft.; 4x8 ft.; 4x10 ft.; 6x6 ft.; 6x8 ft.; 6x10 ft.; 6x12 ft.

Application—Any Hirschman Company Ventilator can be fitted to our Skylight Base.

Specifications on page 11.

EFFICO ROTARY BALL-BEARING VENTILATOR

Wind Driven — High Capacity in Low Winds

Construction and Principle of Operation

The Effico rotating cowl exterior is covered by wind propelled blades; interior by suction blades. There are no moving parts. Effico shaft rotates on ball bearings, fitted with clock precision in solidly enclosed dust-tight and oil-tight housings, and is flooded in inches of non-freezing oil (furnished by us); no oiling is required for years (proven), but we oil-flood them as an extra precaution. The Effico is absolutely noiseless. No drip pans or bird screens are needed.

Great Air Volume Exhaust at Low Wind

All Efficos will draw considerable air at a 1-mile breeze (an apparent calm) without stack or heat assistance. The 30-in. size will rotate (standing start) at a ½-mile breeze. Cowl outlet is over 50% larger than its stack area, which is ample, as no wind enters ventilator to gain the so-called siphonage effect. Suction fan is same size as rotating cowl (note dimension chart). Thus each Effico is equipped with fan over 50% greater in diameter than its stack area. Fan pulls air up stack at even the slowest turning movement and wind blowing across the outlet adds to its efficiency.

The wind has the same syphonage effect on the Effico as on ventilators depending on spyhonage only.

The combination of the carefully designed fan, perfectly made bearings, and the wind-syphonage principles has resulted in the highly efficient Effico.

During high winds, namely, fifteen miles and over, the Effico remains constant, and will not exhaust unreasonable volumes of air which endangers the equilibrium of the ventilating system.

Percentage of Constancy

With United States Weather Bureau reports as a basis, and their findings that the wind at line of ventilators (over roof) is three miles slower than the tower records, shows the Effico Wind-Driven Head during July and August to be 96% constant in New York City, Philadelphia, Boston, Buffalo, Cleveland, Detroit, Galveston, Kansas City, San Francisco, Chicago, Jacksonville, 90% constant in Columbus, Toronto, Louisville, St. Louis; 80% constant in New Orleans, Milwaukee, Cincinnati and Baltimore.

Symmetry

The Effico has artistic lines and pleasing appearance. Lowest in height of rotary ventilators by over 50% average. Note dimension chart.

Cost

Effico Ventilators exhaust more air per-dollar-cost of installation. The wind (only) driven heads exhaust greater volumes and during lower winds, thus a greater capacity within a given period. Effico Wind-Electrics, of course, are 100% constant. See page 3 of our catalogue.

CAPACITIES OF EFFICO ROTARY BALL BEARING VENTILATORS

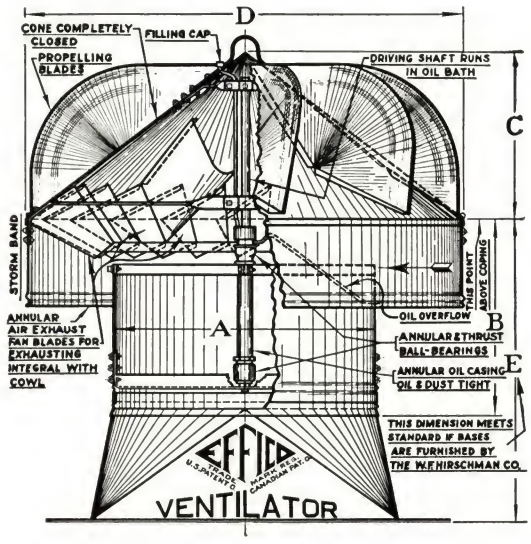
Guaranteed and Conservative
Cubic Feet of Air Exhausted Per Minute

Wind velocity, miles per hour	Temperature difference in degrees Fahrenheit in building and outside											
	0	10	20	30	0	10	20	30	0	10	20	30
	12-in. Ventilator				18-in. Ventilator				24-in. Ventilator			
5	350	440	515	560	600	850	950	1040	1020	1600	1780	1900
10	430	525	600	625	910	1050	1200	1300	1490	1900	2100	2300
	30-in. Ventilator				36-in. Ventilator				42-in. Ventilator			
5	1560	2300	2690	2900	2300	3400	3810	4100	3150	4500	5010	5500
10	2300	3210	3490	3600	3250	4200	4720	5050	4390	5700	6300	6800
	48-in. Ventilator				54-in. Ventilator				60-in. Ventilator			
5	4000	5900	6700	7400	5100	7300	8450	9500	6500	9300	10600	11900
10	5900	7900	8900	9050	7850	9900	11000	11500	9200	12500	14000	14500
	72-in. Ventilator				84-in. Ventilator				96-in. Ventilator			
5	9800	13500	14600	16000	12500	18000	21000	23000	16000	22500	27000	29000
10	13000	17000	19000	20000	18000	24000	27000	28000	22800	30000	33500	35500

ELECTRIC DAMPER CONTROL

Where required, our Hirschman Electric Remote Control Damper device can be supplied with any Hirschman Ventilator. See page 10.

Effico Rotary Ball-Bearing Ventilator Installation



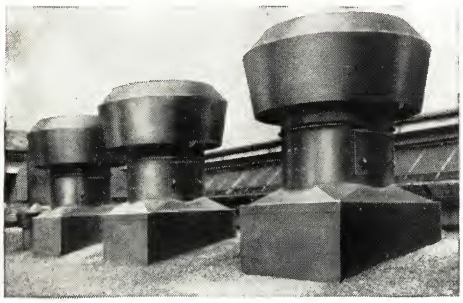
Patented

EFFICO STANDARDIZED VENTILATORS

Dimensions in inches					Galvanized Steel Gauge			Copper, oz.		Telegraph code, gal. toncan vents
A	B	C	D	E	Cowl	Neck and Base	Net weight, lb.	Cowl	Neck and Base	
6	9	9	13	....	26	26	10	14	14	scheck
10	9	9	16	....	26	26	18	14	14	sachem
12	11	8	21¾	23	24	24	25	14	14	scene
18	11½	10	28½	24	24	24	38	16	16	saturn
24	16	14	42	26	24	22	95	16	18	shake
30	22	14	52	28	22	20	140	16	20	sank
36	24	18	62	30	22	18	180	18	24	sargeant
42	33	22	68	39	22	18	300	18	24	serpent
48	34	24	74	40	22	18	370	18	24	serve
54	35	24	86	41	22	18	525	20	24	sham
60	37	24	98	43	20	18	650	20	24	shawl
66	43	30	103½	49	20	18	700	20	32	sunk
72	50	30	114	56	20	18	750	20	32	shop
84	54	40	130	60	18	16	900	24	32	slave
96	54	45	153	60	18	16	1025	24	32	shekel

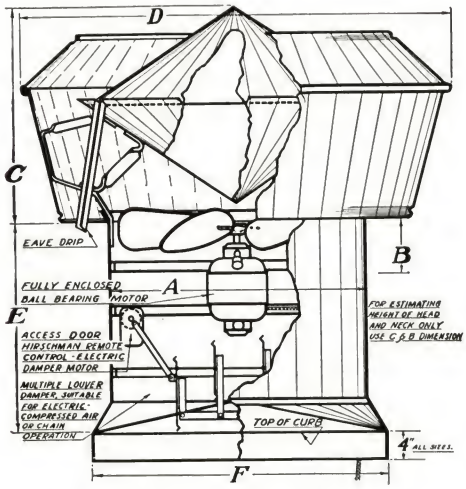
Effico Oil Flooded Dust and Acid Proof Bearing Housings

HIRSCHMAN F (Fan) VENTILATOR NON-AUTOMATIC



Philadelphia Electric Transformer Station.

Three 48" Hirschman "F" Electric Ventilators installed, each exhausting 21,-900 C.F.M. With 2 H.P. Motor Ventilators absolutely dry inside after cloudburst.



F Fan Ventilator (Electric) Showing Electric Damper Control (Patented)

Recommendation

Where a high class ventilator with a high exhaust velocity against resistance is required, and where the Effico Rotary Head, or the Effico Wind-Electric Automatic Ventilator, due to obstructed locations or moderate even capacity, is not adaptable, then we recommend the F Fan Ventilator.

Adaptable for Public Lavatories, Bakeries, Hotel and Restaurant Dining Rooms and Kitchens, Chemical Laboratories, Industrial Plants, Projection Rooms in theatres and in all places for the exhausting of fumes, dust, gases, excessive heat or steam.

The Motor in this ventilator may be had in the ISOLATED MOTOR DRUM SECTION as shown on page 7.

Design — Appearance — Construction

Sturdy construction, weatherproofness, and appearance are given consideration in the design of this ventilator. For free air or as a pressure blower this is decidedly an apparatus of high merit.

Exhaust Head

The design is such that air driven 1200 ft. velocity through the head, registers only .032-in. water gauge static pressure. Thus for a fan or exhaust head, it is very desirable. When so used and the fan is cut off the ventilator still ventilates as a syphon ventilator. There are no shutters to blow or freeze shut. *Head only* may be purchased for use as outlet for large fan discharge.

Specifications on page 11.

CAPACITIES HIRSCHMAN F ELECTRIC VENTILATORS

Size of stack, in.	Fan speed, r.p.m.	Horse-power	Capacities—c.f.m. static pressure in inches of water				Type of motor	Shipping weight, lbs.	O-quiet X-silent *
			1/8 in. or less	1/4 in.	3/8 in.	1/2 in.			
10	1750	1/50	250				S.D.	100	X
12	1750	1/20	725	400			S.D.	100	O
	1150	1/50	250				S.D.		X
18	1750	1/8	1500	900			S.D.		O
	1100	1/6	1500	900	520	200	S.D.		X
	850	1/20	820				S.T.D.		X
24	1100	1/4	3000	2200	1600	1000	S.D.		O
	1700	1	4800	4200	3800	3000	S.D.	270	—
	1100	1/2	4000	3200	2350	1700	S.D.	225	—
	825	1/4	2600	1500	920		S.T.D.		
30	1080	1/2	5000	4000	2700		S.D.	300	—
	720	1/2	4800	3800	2700	1900	T.		O
	900	1	6700	5600	4100	3100	S.		O
36	1080	2	8500	7600	6600	5400	S.D.	475	—
	900	1 1/2	7300	6000	5000	3900	S.D.		O
	680	1/2	5000	3500			S.T.D.		X
42	680	1 1/2	8000	6250	4800	3500	S.D.	525	O
	780	1 1/2	7800	6500	5400	4000	T.		O
	1080	2 1/2	10700	9700	8650	7700	S.D.		—
	465	1	7700	4800	2600		S.T.D.		X
48	365	1	10000	7000			S.T.D.	700	X
	680	1 1/2	10000	8000	6400	4500	S.T.D.	700	O
54	365	1 1/2	14000	7800			S.T.D.	780	X
	465	2	16000	12000	7500		S.T.D.		O
60	520	5	22000	18000	16000	13000	S.T.D.	860	—
	440	2	16000	12000			S.T.D.	800	O

*These capacities marked O and X are not maximum, but are based on silent requirements for public and semi-public buildings.

All capacities based strictly on A.S.H.V.E. code

Prefix letters in motor column indicate kind of current for which the motors are available.

Alternating—S, single-phase, two or three-phase, 60 cycle. T, single-phase, two or three-phase, 25 cycle. D, direct-current.

The low speeds are suitable for schools, theatres, auditoriums and other quiet running requirements.

DIMENSIONS OF HIRSCHMAN F VENTILATORS AND GRAVITY CAPACITIES OF F, S-E and L-U VENTILATORS

Dimensions in inches		Thickness of metal				Capacities at 10M.p.h. wind velocity Temperature difference inside and outside		
		Ga. galvan.		Oz. copper				
A	C + E	Head	Base	Head	Base	10°	20°	30°
12	33 1/2	24	24	16	16	360	460	525
18	38	24	24	16	16	717	950	1050
24	48	24	22	16	18	1400	1675	1800
30	52 1/2	22	20	18	20	2200	2600	2800
36	57	22	18	20	24	3160	3700	3900
42	62	20	18	20	24	4300	5000	5300
48	72	18	18	20	24	5390	6500	7000
54	76	18	18	20	24	7200	8300	8800
60	81	18	16	24	24	8000	9200	10000
66	88	18	16	24	32	10600	11500	12100
72	96	18	16	24	32	12700	14000	15000
84	101	18	16	24	32	17400	19000	22000

HIRSCHMAN S-E and L-U VENTILATOR

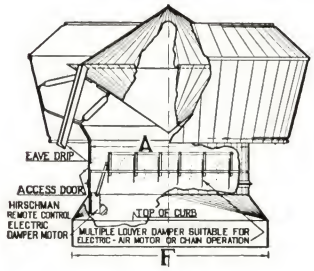


Diagram of L-U Ventilator

Patented

Two apparatus in one. Illustration shows electric control in position

S-E Ventilator

The S-E is a very high grade stationary type syphon ventilator. It starts exhausting at slightly over a two-mile wind without any temperature difference. Capacities shown in chart in dimension table above, left, are conservative.

L-U Ventilator

L-U Ventilator consists of an S-E Ventilator Head constructed with a specially short base and neck. In this neck is built a circular multiple blade louver damper.

S-E and L-U Ventilators are in general appearance similar to the "F" Electric Cowl, but the design is such, to give a greater syphonage exhaust capacity.

Specifications on page 11 of our Catalogue.

HIRSCHMAN ISOLATED ELECTRIC VENTILATORS

Hirschman Isolated Electric Motor Sections

These isolated sections can be supplied with any of our Electric Ventilators. These isolated sections can be used horizontally as shown below or vertically as shown at right.

Hirschman Isolated design gives the best known motor protection for any requirement. The Motor is well ventilated by outside air.

For Extreme Heat Protection

For extreme conditions or code requirements the isolated walls may be double shell asbestos or mineral wool packed as shown at right, or air space, or triple shell can be supplied.

Isolated construction is recommended for exhausting vapors, heat, acid fumes, dust, grease, paint spray booths, industrial conditions of all kinds, etc.

A remedy for bad draft in heating plants, chimneys, also for sluggish gravity heating air supply ducts.

Typical Applications

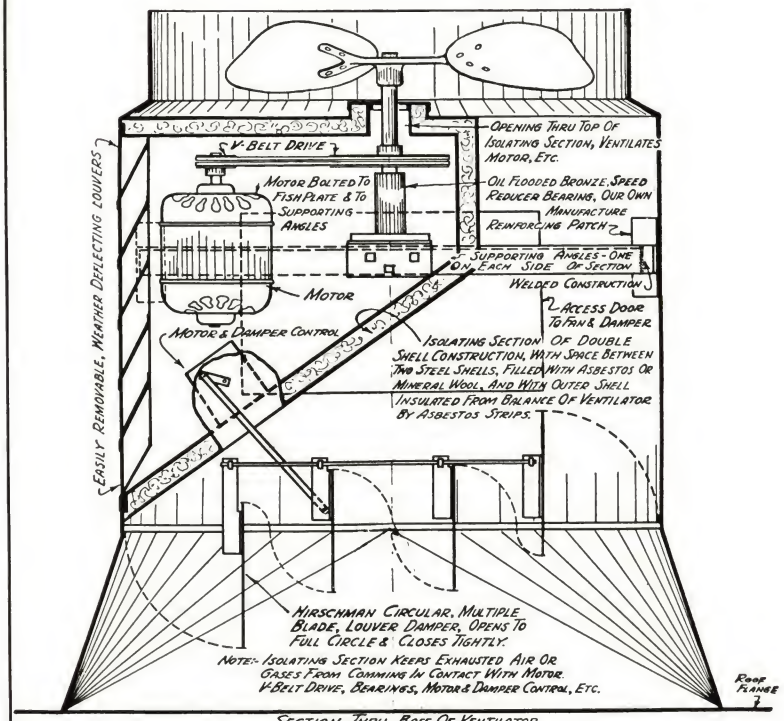
Motion Picture Booths — Laundries
Chemical Laboratories — Paint Spraying Rooms
Kitchens — Acid Conditions
Sand Blasting Rooms

Extreme Heat Applications

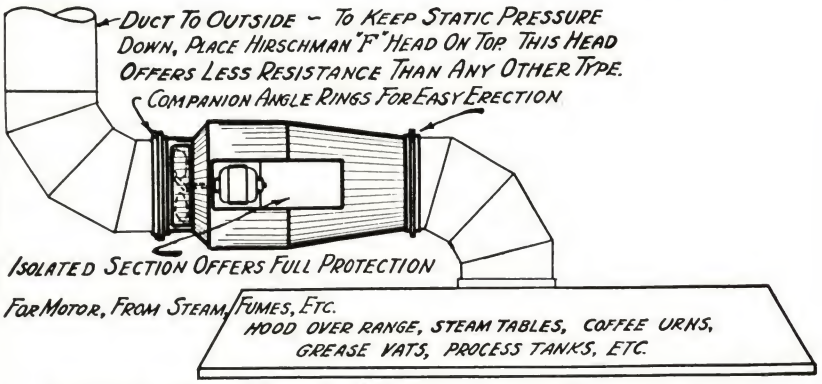
Heat Treating Ovens — Foundries
Hoods over Electric Furnaces — Porcelain Enamel Works
Bakery Ovens — Hoods over Coffee Urns and Ranges

Hirschman Isolated Electric Motor Sections form a perfect protection for motors and are easy to clean. Made in sizes up to 96 inches diameter and to exhaust 90,000 C.F.M.

For specifications see page 11.



Section Thru Base Of Ventilator



Elevation Showing "Isolated" Electric Section In Connection With Exhaust Hood

HIRSCHMAN "LEROY" ELECTRIC VENTILATOR

Design — Appearance — Construction

This ventilator has been manufactured by us for over 15 years. It is a low priced electric ventilator and is 75% as efficient as our "F" Electric Ventilator.

The LeRoy Ventilator is constructed of high grade materials only and workmanship is first class like all other Hirschman products.

Capacities

For power capacities use "F" Electric capacities as shown on page 6 less 25%. For capacities as a syphon ventilator without motor running use our Firma capacities as given on page 8.

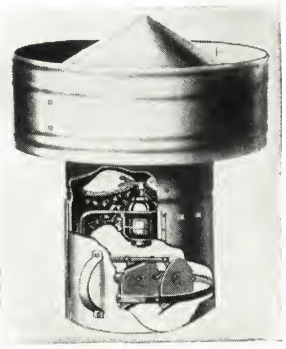
For a pressure exhauster of over ¼-in. static we recommend our "F" Electric and Hercules Power Ventilators, as described on the following and preceding pages. For industrial applications where noise is not the determining factor, considerably increased capacities can be furnished.

This ventilator may be furnished with or without base or damper, and damper, if furnished, may be controlled by chain or by our electric damper control, also controlling fan motor, etc. These controls are all described on page 10.

LeRoy Isolated Electric Ventilator

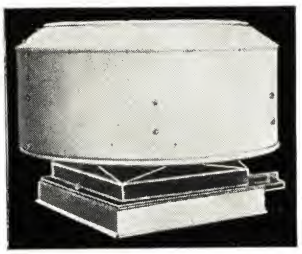
The motor in this ventilator may be had in the isolated motor drum section as shown above.

Specifications—see page 11.

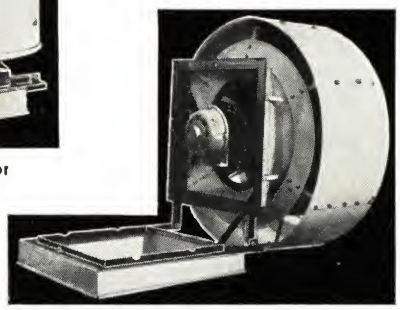

LeRoy Electric Ventilator
Pat.

HIRSCHMAN "HERCULES" POWER VENTILATORS

A Pressure Exhauster—Using Non-Overloading Design of Ventilating Fan



Hercules Power Ventilator
Patent pending



Hercules Ventilator Open for Servicing
Electric motor may be oiled, however, without opening head

The HERCULES POWER VENTILATOR has a fan that does not overload motor at any static pressure. The HERCULES POWER VENTILATOR blast wheel is the conventional backward curved type blade, recognized by Fan Engineers as the proper design for straight (FLAT) horse power curve.

The HERCULES POWER VENTILATOR is highly satisfactory for any ventilating problem, especially for exhausting air where static pressure is encountered, of one quarter inch water gauge and upward.

Its efficiency is at least equal to any centrifugal blower with this design of blast wheel.

Design and Construction

The cowl design is similar to our Super-Firma Syphon ventlator, which is the most efficient stationary ventilator that we manufacture. A ventilator tested by the Case School of Applied Science at Cleveland Ohio, for its weather-proofness and capacities, and now considered one of the highest grade of Roof Ventilators, with an unusually high syphon and gravity efficiency.

The Hercules is designed, as shown above, for very easy accessibility to the motor and fan. The motor and fan do not tilt over on the larger sizes but a very convenient service door is provided. The construction throughout is typical Hirschman Co. rugged design, compactness and the usual Hirschman symmetrical outline will be noted.

Bases

Bases to fit Hirschman steel curbs as described on page 12 (or to fit any curb) flashing over curb and downward four inches are a part of this apparatus. Where required a flat flaring flange, which will require no curb, can be furnished.

CAPACITIES OF HERCULES POWER VENTILATORS

Unit No.	Tip speed of fan	R.p.m. of fan	H.p. of motor	Curb dimension recommended. See note*	C.f.m. capacities at s.p. in inches of water *				Telegraphic code
					¼ in.	⅜ in.	½ in.	¾ in.	
1	6800	1700	⅙	24 x 24	1100	900	800		hed
		1700	¼		1300	1050	900		haunt
2	5200	1100	⅙	24 x 24	1250	1100	1000		heal
		1100	¼		1700	1500	1400	1000	hawk
3	4300	850	¼	28 x 28	2000	1800	1700		helth
	5500	1100	½		2800	2600	2400	2000	hermit
4	4000	640	½	32 x 32	3200	2800			hero
	5350	850	¾		4000	3500	3000		heap
	6900	1100	¾					2500	hew
5	4000	550	½	32 x 32	3600	3200			higgle
	5000	680	¾		4300	3800	3300		hearn
	6250	850	1		5800	5300	4800	3900	hiss
6	3850	460	1	38 x 38	6500	6000	5500	4300	heven
	5700	680	1½		8000	7400	7000	5800	hive
7	3700	370	1	44 x 44	8000	7200	6400	5600	hoard
	4500	450	1½		11000	10100	9200	8300	heath
	5000	500	2		12500	13100	12200	11300	hoax
8	4000	375	¾	44 x 44	8000	7100	6000		hobo
	5000	480	1½		11000	10300	9300	7000	heave
	6000	575	2		13000	12000	11000	9000	hone
9	3600	320	2	50 x 50	14000	13000	11700	10000	hevy
	4200	360	3		19500	18500	17400	16000	hoof
10	3250	260	2	56 x 56	15500	14500	13500	12000	horde
	4000	330	3		17500	16500	15500	14000	heber
	5250	420	5		23000	22000	20500	19000	horny
11	3700	260	2	56 x 56	19000	16500	14000	11000	host
	4000	285	3		23000	20000	16600	14000	heckle
	4550	320	5		28000	24500	21000	16000	huff
	5100	360	7½		34000	30500	27000	23000	hunk

*See next column for capacity notes.

*These capacities are not based on maximum quantities but on quiet operation suitable for schools, etc. All capacities based on standard air at 29.92 in. Barometer, 70° Fahr., and a 50% relative humidity. Tests on A. S. H. & V. E. Code set-up.
Low speed fans are driven by V-belt drive. Motors are constant duty type.
Entire apparatus is isolated from building construction with best sound-proofing materials.
Curb dimensions given in table are based on using Hirschman Double Shell Steel Curbs and allow full area for air entering ventilator.
Allowances must be made for thicker types of construction.
See specifications on Page 11.

HIRSCHMAN "FIRMA" STATIONARY VENTILATORS

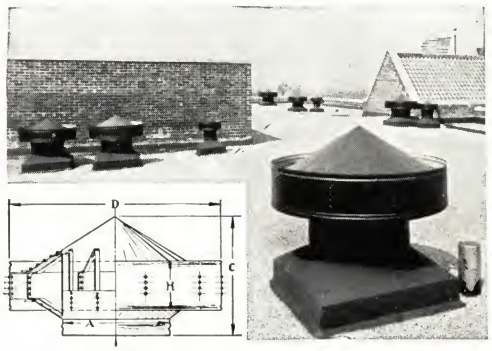


Diagram of Firma Ventilator

Equipment that can answer today's insistent demand for "lowest first cost" engages every alert Engineer and Contractor as never before, particularly if it answers a need for better service and longer life. The Firma Ventilator reflects these facts.

It is a high-grade ventilator, low in cost, highly efficient, correct in design and properly manufactured. A tested product of eighteen years' standing.

A ventilator designed to give exhaust efficiency at low wind velocities. Heavy gauges of metal are used. All steel bracing irons are rustproofed. All rivets have washers on burred side. Its automatic exhaust capacity is effective at a wind velocity of two miles per hour or more. For exhausting excessive heat, fumes, etc., Firma Ventilators have proven their worth. Installed on public buildings and industrial plants, etc., in most every state in the Union, and has the approval of all United States Departments, and of leading engineers and architects.

FIRMA VENTILATOR CAPACITIES AND SIZES (Certified Capacities)

Size, in. A	Capacities at 5 m.p.h.		Dimen., in.		Oz. copper		Gauge galv.	
	Wind. 10° F. temp. diff.	Wind. 30° F. temp. diff.	C	D	Neck	Storm band and cone	Neck	Storm band and cone
10	170	225	9	17	14	14	26	26
12	260	325	11	21	16	14	24	26
14	335	440	14	25	16	14	24	26
16	440	580	18	30	18	14	24	24
18	555	730	18	30	18	14	22	24
20	685	900	20	36	18	16	22	24
24	985	1300	21	43	18	16	22	24
30	1540	2030	25	52	20	16	20	22
36	2215	2930	30	60	24	16	18	22
42	3015	3980	38	72	24	18	18	22
48	3940	5200	38	82	24	18	18	22
54	4985	6585	44	82	24	18	18	22
60	6155	8130	58	102	24	20	18	20
66	7400	9900	60	102	24	24	18	18
72	8900	12000	60	120	24	24	18	18
84	12000	16000	72	144	32	24	18	18
96	16000	21000	78	168	32	24	18	18

HIRSCHMAN "LORNATE" CONCEALED VENTILATOR

For Syphon or Electric Exhaust

This is a most conventional air exhaust outlet. It is suitable for any type of architecture, and is strictly weatherproof. Available as a syphon head or as an electric ventilator. It is made in any size; square, rectangular, or round. For brick or stone flue, we supply metal waterproof concealed head. For all metal flue, the head and stack above roof is furnished by us.

Write for booklet describing many designs and their applications.

"Lornate" Electric Attachment

All designs are furnished as electrics if required. Motor housing is supplied in *vertical* and *horizontal* drives, complete with special quiet running motors. Motors are either rubber or spring mounted. Canvas duct connections are supplied if required. Large sizes have V-belted fan reduction drives.

Exhaust Capacity and Static Pressure

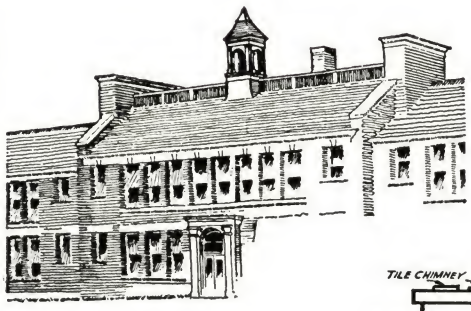
The "Lornate" Syphon Ventilator in 10° temperature difference, five (5) mile wind, for two-story building, exhausts 200 f.p.m. flue velocity.

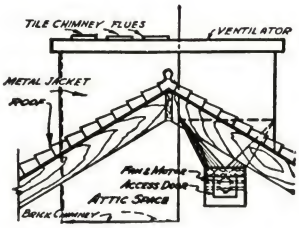
The "Lornate" Head when used as an exhaust head for fan discharge develops .125-in. water resistance at 800 ft. flue velocity. A. S. H. & V. E. Code.

Capacities (Quiet Operation)

The "Lornate" Electric Ventilator for silent operation (sleeping rooms). Engineers please estimate 600 f.p.m. flue velocity. Quiet operation (schools, hospitals) 750 f.p.m. Other requirements (institutions, attics, isolated location) 800-1000 flue velocity. Capacities are based upon quiet operation, not maximum possibilities.

Specifications—*See page* 11 *of our catalogue.*





LORNATE ELECTRIC VENTILATOR CAPACITIES

Please select flue velocity to determine sizes

Hp.	Static pressure in inches of water			X—Silent O—Quiet
	⅛ in.	¼ in	½ in.	
	Capacities in cubic feet per minute			
1/30	400	200		O
1/20	500	250		X
1/6	1000	800		O
1/6	1500	900		O
¼	2000	1400	1000	X
¼	3000	2200	1000	O
½	4000	3200	2200	O
½	5000	3500		X
¾	6000	5000	2900	O
1½	8000	6000	3400	O
2	10000	7000	4500	O
2	12000	9000	7000	O
3	15000	12000	6000	O

HIRSCHMAN DAMPERS—LOUVERS

Dampers—All Hirschman Company Dampers, installed in ventilator or otherwise used, may be operated by chain, by Hirschman Electric or Pneumatic Controls, manual or thermostatically, if desired.

Self-Closing Damper (Non-Electric) may be installed in the following ventilators only; "F" Electric, LeRoy Electric, Lornate and Isolated "F" Electric Ventilators.

Self Locking Device—Any Ventilator may be equipped with Hirschman Self-locking Device if desired. Locks damper closed. (Only one chain needed.)

Fire Dampers—Fusing link can be supplied with any damper to open or close in case of fire.

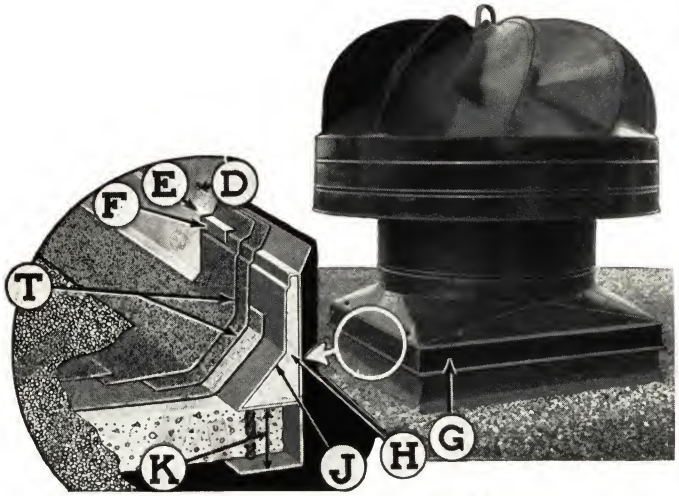
Louver Dampers—We are manufacturers and patentees of the Circular Multiple Louvers as installed in our Louver Unit Ventilators. See pages 4 and 6.

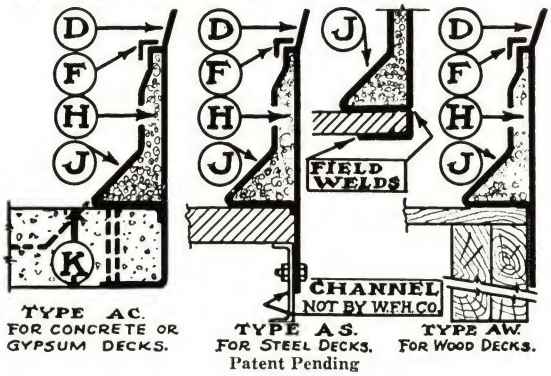
We also manufacture intake, recirculating, mixing dampers, fixed louvers, etc. We make intake louvers, fixed and movable, single units and in combinations in one frame; also, sun-ray deflecting louvers operating with or without our Hirschman Electric Control; also in coordination with fans supplying or exhausting air. Wiring information and diagrams are given when requested. Our controlled Louver (electrically) may be controlled by thermostat or by switch control, all manufactured by us.

Hirschman Anti-back-draft Damper—Micrometer adjustment on damper permits very delicate balancing. Suitable for gravity or power exhaust. Recommended for troublesome air ducts.

HIRSCHMAN STEEL CURBS for VENTILATORS and SKYLIGHTS

Double and Single Shell—For All Types of Roof Deck Construction





HIRSCHMAN DOUBLE and SINGLE SHELL Steel Ventilator Curbs are built for decks of concrete, gypsum, steel and wood. Their light weight reduces load on concrete roofs by many tons. They serve as a reinforcing frame for roof opening and for ventilator base, reducing cost of roof and also cost of ventilators because the Hirschman Double Shell Steel Curb side walls are 1" thick whereas concrete curbs, especially for larger curbs (36" upwards) are six to eight inches thick, thus material and labor cost of ventilator base is greatly reduced. The smaller dimension of base enhances appearance of installation considerably.

The lower end of curb being a form for concrete roof slab, being left in place after concrete is poured, leaves a solid and nicely finished opening. The top end forms a real anchor for ventilator or skylight (D) and a lock for roofing felt or flashing (F.)

(E) Offset in ventilator base forms very rigid construction.

(J) "Cant" strip is integral part of curb.

(K) This standard dimension is 4". It can be modified.

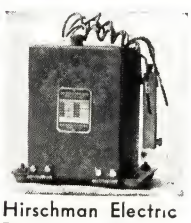
COST—Lower cost than concrete due to saving in ventilator installation cost, forms, concrete, additional metals, labor, cant strips form removals, etc.

DIMENSIONS AND GAUGES FOR VENTILATOR CURBS

Ventilator size "A"	12	18	24	30	36	42	48	54	60	72	96
Curb size BxB actual opening	16x16	22x22	30x30	36x36	42x42	48x48	54x54	60x60	66x66	80x80	116x116
Gauge steel	22	22	22	22	22	22	22	18	18	18	16
Gauge steel in channel section					18	18	18	18	18	16	16

Style B (single shell) not illustrated, is available for industrial use and for sections of the country not subject to intense cold. See specifications page 11.

HIRSCHMAN ELECTRIC DAMPER and MOTOR CONTROL



Hirschman Electric Damper and Motor Fan Control

HIRSCHMAN ELECTRIC CONTROLS will operate any type of damper or louver, round, square, rectangular, or multiblade in either vertical or horizontal position. Will control motor, louvers, etc., in any part of the building.

They require no attention or oiling and are totally enclosed. These electric controls are absolutely positive and hold the subject rigid in desired position and also coordinate with fan so motor cannot be operated when dampers are closed, and other essentials, such as opening damper with or without operating motor.

HIRSCHMAN CONTROLS are Manual, Thermostat, or Hydrostat operated. They operate on any voltage or current available. Some are universal and interchangeable. Specify or order by number, and give designation plate wording.

Flush plates are available in standard and special finishes.

Engraved aluminum designating plates are available in single or gang combinations with any HIRSCHMAN CONTROL with following words: *See Specifications page* 11.

AUDITORIUM	CLASS ROOM ( ) Give No.	LOCKER ROOM
GYMNASIUM		CAFETERIA
BOYS' TOILET	LABORATORY	RESTAURANT
GIRLS' TOILET	MEN'S ROOM	KITCHEN
TOILET	WOMEN'S ROOM	LAVATORY
TEACHERS' ROOM	SHOWER ROOM	EXHAUST SYSTEMS

Control number manual operation	Position engraved on flush or surface switches	Operation of control	Control number thermostat operation	Number wires from switch to control
M2 AM2S	Open: Closed Electric Damper Control	Opens and closes Controls damper only	T2 AT2S	3 2
MF2 AMF2S	On: Off Fan Motor Control	On; fan on damper open Off; fan off damper closed	TF2 ATF2S	3 2
M3	Open: ½ Open: Closed Electric Control	Open; damper open ½ open; damper ½ open Closed; damper closed	—	4
MF3	Power: Gravity: Closed Electric Control	Power; damper open, fan on Gravity; damper open, fan off Closed; damper closed fan off	TF3	4

Groups of damper motors of same type may be operated from one switch where desired.

SPECIFICATIONS FOR HIRSCHMAN PRODUCTS

EFFICO FULL AUTOMATIC WIND-ELECTRIC VENTILATORS *(see page 3 of our catalogue)*. The roof ventilators to exhaust from (....) shall be of the sizes and capacities as shown on plans and shall be automatic wind and electric driven Rotary Ball Bearing ventilators. Each ventilator shall contain the Hirschman Adjustable Wind Actuated Automatic Electric Circuit Breaker. The design of the ventilators shall be such that automatically the electric driven fan shall exhaust the specified volume of air when the wind driven section of ventilator is not exhausting the required specified volume of air.

The electric motors utilized in these ventilators shall be of....cycle....phase.... volts, shall be fully enclosed, resilient mounted, constant duty, silent operating motors. They shall be as manufactured by (....). These shall be installed in the ventilators in an approved manner, and the entire apparatus shall operate efficiently and silently.

(For Isolated motor design see specification on Isolated Ventilators.)

Each ventilator shall contain a Circular Multiple Louver Damper *(for operating device of dampers, see control data on page 10)*. Dampers for these ventilators shall be operated by (Hirschman Electric Damper Control). *Note: (See Ventilator Electric Control Specification)* (Pneumatic motors as specified under temperature regulation) (Chain) controlled from location as selected by the architect.

These ventilators shall be of (Galvanized....Iron) (Copper) of manufacturer's standard gauges. Galvanized ventilators to be painted gray enamel.

These ventilators shall be the EFFICO Full Automatic WIND-ELECTRIC Ventilators as manufactured by the W. F. Hirschman Company of Buffalo, N. Y. *(Special sound deadening mounting is not needed for this ventilator.)*

EFFICO FULL AUTOMATIC WIND-ELECTRIC VENTILATOR HIRSCHMAN MASTER CONTROL specification *(see page 3 of our catalogue)*. The roof ventilators to exhaust from (....) shall be Rotary Ball Bearing of sizes and capacities shown on plans, consists of the following group of controlled ventilators *(Class Room No. 1-3-7-8-9-gymnasium)*. Each ventilator to contain an electric motor driven fan of required size and horse power motor to exhaust the required volume of air as indicated on the plans. These electric motor driven fans shall be controlled by one Master Automatic WIND-ELECTRIC Ventilator. This Automatic Ventilator designated on the plans shall contain the Hirschman Adjustable Wind Actuated Automatic Electric Circuit Breaker. The design of the ventilators shall be such that automatically the electric driven fan shall exhaust the specified volume of air when the wind driven part of the ventilator is not exhausting the required specified volume. The Master Control shall control the energizing and de-energizing. These ventilators shall be the EFFICO WIND-ELECTRIC Non-Automatic Ventilators and one EFFICO WIND-ELECTRIC Full Automatic Ventilator so designed as a master control ventilator.

The electric motors utilized in these ventilators shall be of....cycle....phase.... volts, shall be fully enclosed, resilient mounted, constant duty, silent operating motors. They shall be as manufactured by (....). These shall be installed in the ventilators in an approved manner, and the entire apparatus shall operate efficiently and silently.

(For Isolated motor design see specification on Isolated Ventilators.)

Each ventilator shall contain a Circular Multiple Louver Damper. *(Specification writer:—For operating device of dampers, see control data on page 10.)*

Dampers for these ventilators shall be operated by (Hirschman Electric Damper Control). *Note: (See Ventilator Electric Control Specification)* (Pneumatic motors as specified under temperature regulation) (Chain) controlled from location as selected by the architect.

These ventilators shall be of (Galvanized....Iron) (Copper) of manufacturer's standard gauges. Galvanized ventilators to be painted gray enamel.

These ventilators shall be the EFFICO WIND-ELECTRIC Non-Automatic Ventilators and one EFFICO WIND-ELECTRIC FULL Automatic Ventilator as manufactured by the W. F. Hirschman Company of Buffalo, N. Y. *(Special sound deadening mounting is not needed for this ventilator.)*

"F" FAN VENTILATORS *(see page 6 of our catalogue)*. The fan ventilators shall be of the sizes as shown on the plans, and shall have (round) (square) style bases. They are to be of (Gal. Iron) (Copper) of manufacturer's standard gauges. Exhaust area between cones and storm band to be 60% greater than neck area. Galvanized Ventilators to be painted with gray (....) enamel. The motors of....r.p.m.....hp. shall handle....c.f.m., and operate on....volts....cycles....phase current. *For Isolated motor design see specification on Isolated Ventilators.* They shall be the Hirschman (F Fan Ventilator) as manufactured by the W. F. Hirschman Co., Inc., Buffalo, N. Y. Dampers for these ventilators shall be operated by (Hirschman Electric Damper Controls. *Note: See page 10 for type.)* (Pneumatic motors as specified under temperature regulation) (Chains).

HERCULES POWER VENTILATORS *(see page 8 of our catalogue)*. The power ventilator apparatus exhausting from (....) shall have capacity of....at....S. P. and powered by....H. P. Motor. Apparatus exhausting from (....) shall have capacity of ....at S. P. and powered by....H. P. motor. Shall be of the sizes as shown on the plans and shall have manufacturer's standard (square) style bases. They are to be of (Galv. ....Iron) (Copper) of manufacturer's standard gauges. Galvanized ventilators to be painted gray enamel.

The Fan Wheel shall be of the multiblade, backward curved, no-overload-horsepower at any static pressure type. Fan tip speed shall not exceed (....) F. P. M. and shall operate quietly and free from vibration at specified capacities. The electric current for motor is (....) cycle, (....) volts, (....) phase. Motor shall be ball bearing, constant duty of (....) manufacture. Control switch.....

Ventilator design shall be such as to give quick and free access to electric motor and fan. Each entire apparatus shall be mounted on sound deadening (prepared cork) (rubber impregnated felt) and no noises or vibration shall be transmitted into building, all as approved by the architect.

This apparatus shall contain all the essential requisites of the Hirschman Hercules Power Ventilator as manufactured by the W. F. Hirschman Co., Inc., Buffalo, N. Y.

LEROY ELECTRIC FAN VENTILATORS *(see page 7 of our catalogue)*. The fan ventilators shall be of the sizes as shown on the plans, and shall have (round) (square) style bases. They are to be of (Gal....Iron) (Copper) of manufacturer's standard gauges. Galvanized ventilators to be painted gray enamel. The motors of....r.p.m..... hp. shall handle....c.f.m. and operate on....volts....cycles....phase current. *For Isolated motor design see specifications on Isolated ventilators.* They shall be the Hirschman (LeRoy Electric Fan Ventilator) as manufactured by the W. F. Hirschman Co., Inc., Buffalo, N. Y. Dampers for these ventilators shall be operated by (Hirschman Electric Damper Control. *Note: See page 10 for type.)* (Pneumatic motors as specified under temperature regulation.) (Chains.)

LORNATE FAN VENTILATOR *(see page 9 of our catalogue)*. The ventilators shall be of the sizes as shown on the plans, and as detailed in the drawings. They are to be of (Gal.....Iron) (Copper). They are to operate absolutely silent, and handle.... c.f.m. at fan speed of....r.p.m. Motors shall operate on....volts....cycle...phase current. They shall be the Lornate Fan Ventilators as manufactured by the W. F. Hirschman Co., Inc., Buffalo, N. Y. Damper for these ventilators shall be operated by (Hirschman Electric Damper Control. *Note: See page 10 for type.)* (Pneumatic motors as specified under temperature regulation.)

HIRSCHMAN ISOLATED ELECTRIC MOTOR SECTION *(see page 7 of our catalogue)*. The electric motors exhausting from (....) shall have the electric motor, fan drive, bearings, control, etc., fully protected from all air being exhausted by means of an enclosing metal shell (mineral wool filled double shell) housing. This Isolated section shall be designed to maintain full and satisfactory ventilation and access to contained apparatus. This Isolated section shall become an integral part of the ventilating unit covered in this specification.

SILENT CHURCH VENTILATOR. Ventilating apparatus No. (....) exhausting from (....) shall discharge.....C.F.M. at....S.P. Shall be absolutely noiseless and vibrationless. Electric Damper and Motor Control shall be by one remote control switch, giving power, gravity and closed position and fan must not run on closed or gravity positions. This unit shall be made of heavy galvanized sheets; motor, damper control and unit mountings shall be of angles and channels, assembled by welding; motor shall be fully enclosed, resilient mounted, continuous duty type operating and driving fan at suitable speed and entire unit shall be resiliently mounted in a manner approved by architect. This ventilator unit shall comprise an electric motor, fan, louver damper. Electric damper and fan control self contained unit. It shall be the Hirschman Silent Church Ventilator and contain every feature and construction requisite of this Company's apparatus. It shall be manufactured by W. F. Hirschman Company or approved equal.

EFFICO INTERNAL LOUVER UNIT VENTILATORS *(see page 4 of our catalogue)*. The roof ventilators shall be of the sizes as shown on plans; shall be Rotary Ball Bearing Ventilators comprising fully enclosed conical rotating cowl, the exterior of which shall be covered with wind propelling blades and the interior with suction blades. They shall be constructed of (Galvanized....Iron) (Copper). Bases to be of (round) (square) style and the stack to be sufficiently high to elevate the propelling blades above the coping. The neck shall contain Multiple Blade Circular Louver Damper. These dampers to be operated by means of (Hirshman Electric Damper Control *(see page 10 of our catalogue for type)*; (pneumatic dampers as specified under temperature control); (Chain for manual operation).

They shall be the EFFICO Internal Louver Unit Ventilators comprising the head, base, Multiple Louver Damper, access door, etc., of all standard gauges and construction as manufactured by the W. F. Hirschman Company, Inc., of Buffalo, N. Y.

EFFICO ROTARY BALL BEARING Ventilators *(see page 5 of our catalogue)*. The roof ventilators of the sizes as shown on the plans shall be Rotary Ball Bearing Ventilators comprising fully enclosed conical cowl; the exterior of which is covered with wind propelling blades, the interior with suction blades. The bearings shall be fully ball bearing, oil flooded fully enclosed in oil and dust tight housing. The ventilators shall be mounted on necks and stacks sufficiently high so that the propelling blades shall be above coping. The bases of (square) (round) style of same gauge as ventilator neck. Each ventilator shall contain a well fitted chain operated butterfly damper. The ventilators shall be of (Galvanized....Iron) (Copper) of the manufacturer's standard gauges.

They shall be the EFFICO Rotary Ball Bearing Ventilators as manufactured by the W. F. Hirschman Company, Inc., of Buffalo, N. Y.

L-U LOUVER UNIT Ventilators *(see page 6 of our catalogue)*. The exhaust ventilator units for syphon exhaust shall be of sizes as shown on the plans. They shall be of the manufacturer's standard gauges of (Galvanized....Iron) (Copper). The ventilator cowl shall comprise an inverted cone which shall be larger and extend upward beyond the upper cone forming a weatherproof gutter. The storm band shall comprise an upper and lower frustrum shape. The exhaust area between the storm band and cones shall be at least 50% greater than neck area of the given size ventilator. The ventilators shall be strictly weatherproof. Each ventilator shall be equipped with Circular Multiple Blade Louver Damper installed in the neck of the ventilator by the manufacturer of the ventilator. The operation of these louver dampers shall be by (Hirschman Electric Damper Control) *(Note: See page 10 of our catalogue for type)*; (pneumatic motors as specified under temperature control specification); (chain). Heads, bases, dampers and damper motors shall all be completely assembled at the manufacturer's plant.

They are to be the Hirschman L-U LOUVER UNIT Ventilator as manufactured by the W. F. Hirschman Company of Buffalo, N. Y.

S-E VENTILATORS, Syphon Exhaust *(see page 6 of our catalogue)*. The roof ventilators of the sizes as shown on the plans are to be constructed of (Gal....Iron) (Copper) of manufacturer's standard gauges. They shall be Hirschman S-E ventilators as manufactured by the W. F. Hirschman Co., Inc., Buffalo, N. Y. They shall be mounted on (round) (square) style bases of same gauges of metal as the necks of the ventilators.

FIRMA STATIONARY VENTILATORS *(see page 8 of our catalogue)*. The roof ventilators of the sizes shown on the plans shall be of standard manufacturer's gauge of (Gal....Iron) (Copper). They shall be the Firma stationary Ventilators as manufactured by the W. F. Hirschman Co., Inc., Buffalo, N. Y., and shall be mounted on (round) (square) style bases of same metal gauges as the necks of the ventilators.

EFFICO SKYLIGHT BASES *(see page 4 of our catalogue)*. These ventilators to be equipped with Effico Skylight Bases of (Gal....Iron) (Copper) to fit over....curbs. These skylights are to be of puttyless construction and design as manufactured by the W. F. Hirschman Co., Inc., Buffalo, N. Y.

HIRSCHMAN STEEL CURBS *(see page 10 of our catalogue)*. (The roof ventilator) (skylight) curbs of sizes as shown on plans shall be of the (double shell) (single shell) steel construction. The double shell design shall have one inch thick hollow walls, which shall be filled with mineral wool. The curbs shall serve as a mounting for the roof ventilators; shall contain a 45 degree cant for the roofing felt; a lock for the roof flashing around the curb and an anchor for the roof ventilators. These curbs shall extend (8 inches above) (12 inches above the base roof line). *(If roof of poured concrete* the curb shall serve as a permanent form for pouring the concrete around the ventilator opening and shall be placed in position before the pouring of the concrete.)

These above curbs shall be the type *(see data page 10)*. They shall be the Hirschman (double shell) (single shell) Steel Curbs type (....) (....) as manufactured by the W. F. Hirschman Company of Buffalo, N. Y.

HIRSCHMAN ELECTRIC CONTROL *(see page 10 of our catalogue)*. All (....) ventilator dampers (and electric ventilator fan motors) shall be controlled by remote (manual) (thermostat) operated electric controls. The control switch for (*auditorium*) shall be by one switch controlling damper and fan motor. The face plate showing operating positions etched on (same) ("Power," "Gravity," "Closed"). (*Specification writer see other position plates this bulletin*), also bearing the designating word (*Auditorium*). The switch shall be (flush mounted) type (*in gang with others* indicated elsewhere). Face plates of (brushed brass) (chromium) (brown bakelite). *(Specification writer see page 10 this bulletin)* as regularly furnished by the control manufacturer. Control shall operate on same current as fan motor.

These controls shall be installed by the manufacturer in the ventilators and properly tested before shipment to insure correct operation. All ventilator controls and switches shall be furnished by ventilator contractor and shall contain all the requisites of the W. F. Hirschman Company Electric Control, type (....).

All the above controls, switches and location plates, dampers and ventilators shall be manufactured and assembled by one manufacturer. They shall be as manufactured by W. F. Hirschman Company of Buffalo, N. Y.

Control for (....) ventilator shall be same as above but designating plate bearing word (....).